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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/774,898

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Robert A. Rabiner

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EXAMINER

LUONG, PETER

ART UNIT

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3737

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/774,898	<b>Applicant(s)</b> RABINER ET AL.	
	<b>Examiner</b> PETER LUONG	<b>Art Unit</b> 3737	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 10 December 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1,3-24,26-34,36-55,57-61 and 75-86 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-24,26-34,36-55,57-61 and 75-86 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |  |
|--|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input checked="" type="checkbox"/> Other: <u>IDS dated 10/02/2006 only page 31 of 34 which was previously inadvertently not mailed to applicant.</u> |



## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 3-24, 26-34, 36, 40-55, 57-61, and 75-86 are rejected under 35 U.S.C. 102(b) as being anticipated by Kuris (US 3,565,062 - cited in IDS). The patent of Kuris discloses a **medical device** (abstract) **comprising an elongated, flexible probe** (43, col. 3, ln. 35-36) **comprising a proximal end (45), a distal end (50) and a longitudinal axis** (it is inherent that two ends of a tubular structure would have an axis associated along its length) **between the proximal end (45) and the distal end (50); a transducer** (41, col. 6, ln. 36-39, a piezoelectric material) **configured to create a torsional vibration** (col. 4, ln. 44-49) **along the longitudinal axis of the elongated, flexible probe (43), wherein the ultrasonic probe and the transducer being adapted so that the torsional vibration induces transverse vibration along a portion of the ultrasonic probe** (the examiner takes the position that the ultrasonic probe and transducer of Kuris is capable of being adapted so that the torsional vibration induces a transverse vibration, col. 4, lines 42-50).

3. With respect to claims 4-8, 10, 27-29, 41, 46, and 59-60, there are no structural differences between the device of Kuris and the present application. Therefore, the device of Kuris is capable of producing the variations of torsional and transverse

vibrations (i.e. inducing, tuning, shifting, segregating, or superimposing) as claimed in the present application.

4. With respect to claims 3, 18, 26, 36, 42, and 53-54, it is inherent that since the device of Kuris is an ultrasonic probe, it will support vibrations, as the purpose of the device is to transmit vibrations from the probe to the surrounding area (see MPEP 2112).

5. With respect to claims 9, 11, 13, 44-45, and 47, there are no structural differences between the device of Kuris and the present application. Therefore, the device of Kuris is capable of producing the variations of nodes and anti-nodes (col. 6, ln. 17-21).

6. With respect to claims 12, 14-15, 43, 61, Kuris also discloses that **the torsional vibration and the transverse vibration** (col. 4, ln. 44-49) **generate acoustic energy in a medium (17) surrounding the ultrasonic probe (43) through an interaction of a surface (50) of the ultrasonic probe (43) and the medium (17) surrounding the ultrasonic probe (43)** (i.e. transmits to the vascular system, col. 2, ln. 39-47).

7. With respect to claim 16 and 51, Kuris discloses **an acoustic assembly (36) configured to deliver ultrasonic energy in a frequency range from about 1 kHz to 1000 kHz** (col. 3, ln. 5-8) that encompasses the claimed range of **10 to 100 kHz**.

8. With respect to claim 17 and 52, Kuris discloses that **the ultrasonic energy source configured to determine (36) a resonant frequency of the transducer (41) and provides an electrical energy to the transducer (41) at the resonant frequency of the transducer (41)** (col. 6, ln. 5-11).

9. With respect to claims 19-20, 22-23,30 and 31, Kuris discloses that **the ultrasonic probe (43) comprises an approximately circular cross section** (fig. 11, claim 14) **from the proximal end (45) of the ultrasonic probe (43) to the distal end (50) of the ultrasonic probe (43) and the ultrasonic probe (43) comprises a varying cross section from the proximal end (45) of the ultrasonic probe (43) to the distal end (50) of the ultrasonic probe (43)** (fig 10, 51c).
10. With respect to claim 21, Kuris discloses **a portion of the longitudinal axis of the ultrasonic probe comprises a radially asymmetric cross section** (the cross section of the tip gradually decrease in size and there is a stepwise decrease in cross section from the tubular catheter to the probe, fig. 10).
11. With respect to claim 32, it is within the level of ordinary skill in the art to dispose of an old or broken probe at a one point in time; furthermore it is recognized as an intended use in.
12. With respect to claim 33, it is recognized that during a surgical procedure the surgical device is used on the patient undergoing the procedure, furthermore it is recognized as an intended use in which the device of Kuris is capable of performing.
13. With respects to claims 34, 36, 40-47, 51-55, and 59-61, the device of Kuris inherently discloses the method steps substantially as claimed.
14. With respect to claim 48-50, Kuris discloses the method step of moving the probe back, rotating the probe, and repositioning the probe to provide a new exposed area (col. 9, ln. 68-74).

15. With respect to claims 75-86, Kuris discloses wherein the ultrasonic probe has a first region (51c), a second region (42c) that is smaller than the first, and a third region (50c) that is smaller than the second (see figure 10).

***Claim Rejections - 35 USC § 103***

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

17. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

18. Claims 37-39 and 57-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuris (US 3,565,062 - cited in IDS) in view of McCullough et al. (US 6,723,451).

19. The patent of Kuris discloses all the claimed subject matter with the exception of the method steps of tuning the vibrations.

20. However the patent of McCullough et al. teaches the method of tuning an ultrasonic horn by altering its length (column 14, lines 35-36). One of ordinary skill in the art would recognize that bending (therefore applying tension) constitutes as altering

length. Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the methods taught in Kuris in view of the teaching of McCullough to obtain a desired vibration frequency (column 14, lines 35-36).

### ***Response to Arguments***

1. Applicant's arguments filed 12/10/2007 have been fully considered but they are not persuasive.

2. Applicant contends that Kuris does not disclose or suggest a probe and transducer adapted so that a torsional vibration created along the probe induces a transverse vibration along the probe or producing a torsional vibration along the probe that induces a transverse vibration along the probe. Applicant also contends that Kuris does not disclose vibrating his probe in a combined torsional and transverse mode.

However, the Examiner points to column 4, lines 42-50 of the Kuris patent as referenced in the previous office action, Kuris discloses "the active tool output surface enjoys **transverse vibration**, compressional vibration, flexural vibrations or **torsional vibrations** or **even combinations of said vibrations**". Therefore, Kuris discloses his probe to be in a combined torsional and transverse mode. Furthermore, as stated in the previous office action, applicant has failed to claim any structural differences between the device of Kuris and the present application. Therefore, the device of Kuris is capable of producing the variations of torsional and transverse vibrations (i.e. inducing, tuning, shifting, segregating, or superimposing) as claimed in the present application.



***Conclusion***

3. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PETER LUONG whose telephone number is (571)270-1609. The examiner can normally be reached on Monday - Thursday, 9:30 a.m. - 5:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on (571) 272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ruth S. Smith/  
Primary Examiner, Art Unit 3737

/P.L./